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THE AMERICAN

GAS LIGHT JOURNAL

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[OFFICIAL NOTICE.]

Ohio Gas Light Association.

OFFICE OF SECRETARY, COLUMBUS, O., Feb. 13, 1893.

To the Members of the Ohio Gas Light Association:

The Ninth Annual Meeting of the Ohio Gas Light Association will be held at Columbus, O., on March 15 and 16, 1893.

The arrangements for the meeting will be the same as they were last year. The sessions will be held in the Employees' Hall of the Columbus Gas Company, and the hotel headquarters will be the Chittenden, one square distant. Members are advised to secure rooms in advance.

The following papers have been promised:

1. "The Present State of the Art of Purification in Closed Vessels," by S. F. Hayward, New York City.
2. "A Test of the Backus Heater," by Jerome Penn, Washington Court House, O.
3. "Should Small Gas Companies Put in Electric Light Plants?" by H. L. Hurlburt, Oberlin, O.
4. "Is the Wilkinson Process Economical for a Small Works?" by J. F. Seamon, Uniontown, Pa.
5. "Discrimination by Gas Companies in the Treatment of their Consumers," by G. A. Allen, Zanesville, O.
6. "Governor Burners," by Irvin Butterworth, Columbus, O.
7. "Oils for Gas Enriching," by A. S. Miller, Chicago, Ills.
8. "The Present and Future Competition of Gas and Electricity," by Joseph Gwynn, Steubenville, O.

There will be the usual "Question Box," for which members are requested to send to the Secretary, well in advance of the meeting, any questions which they desire to have answered. The Executive Committee has also recommended that a portion of one session be set apart for "miscellaneous discussions."

The meeting promises to be interesting, and it is hoped there will be the usual generous attendance. Visitors will be welcome.

Respectfully, IRVIN BUTTERWORTH, Secretary.

BRIEFLY TOLD.

A NEW YORK BILL.—The Legislatures of about every State of the Union are at present busy with matters pressing upon the question of "regulating" the companies that furnish the inhabitants of those States with artificial light, and while this attention has been the portion of such companies for many years back, and although like attentions are now looked forward to as things that naturally come with the announcement that the committees of the various Legislatures have been organized and are ready for business, we must confess that the old, old story has, after all, an unfamiliar side. It is only fair to presume that the striking measures all would have some "vein of consanguinity," something by which we could recognize them as the friends of former days; and while blood will tell, as it does tell in the majority of the ancient and dishonorable messes of bills that have cropped out so far in Albany this year, in so far as these relate to matters gaseous, it is nevertheless a fact that one of the measures so introduced appears to have nothing

but new blood, different blood, in the sections that compose and comprise its anatomical structure. It is true, the same monstrosity was introduced last year, but it was late in the season, and the bantling or abortion was put away, seemingly in an incubator, so that it might grow and thrive for early unconcealment at the session of this year of grace; but it is none the less "new" on that account, for many did not know of it at all. It is new to all intents and purposes—blood and bones. The bill is given in full on page 301 of this issue, and we submit that it is well worth looking over; that its possibilities are well worth studying. Years ago, when the Legislature of the United States was not on a much higher plane than the Legislature of New York now is, not an uncommon thing was the enactment of a general law prescribing, for instance, that a certain improved form of mail collection box should be adopted by the Post Office Department, or that a certain form of something else should be used in certain cases in the Army Department or the Navy Department, and so on; and it is also pretty well known that somebody close to the Chairman, or to the underlings of the "committee" had the identical thing that was needed for sale—whether for the use of the Post Office, the Army or the Navy. Of course, such propinquity of that that was ordered and that which was furnished may have been but an illustration of the fitness of things; but people will think, and afterwards will give expression to their thoughts. So, with respect to New York Assembly bill No. 234. On its face it looks to be an attempt to foist upon the gas companies of New York city somebody's pressure regulator, despite the thin veil sought to be thrown upon the rascality by Section 2 of the measure, which declares that "said Commission" may invite competition amongst inventors for the devising of "a device," etc. Three persons, each to be paid $5,000 per annum, said salaries to be paid out of a tax levied upon the companies, and other clerical help, the expense of which is not to exceed $3,000 per year, also to be taken out of the same source; and all of this for what? To determine whether there is "an increase of pressure of gas burners, whereby the consumption of gas is inordinately and improperly increased, and to take such action as may be necessary to regulate the flow of gas supplied to the consumers by gas companies." This looks to be a pretty steep expenditure for the introduction of somebody's pressure regulator, and if the "bill" does not mean such an introduction, the expenditure seems to be all the steeper still, for every gas consumer ought to know that he can cut down—yes, in fact to cutting it off altogether—the flow of gas to and from his burner by merely twisting the meter key to the point that fits his individual circumstance or condition. Truly, if this is the best gas commission measure that our legislators can devise, they might take a trip over to the Massachusetts State House with results that must inure to their better understanding.

THE OHIO MEETING.—The official notification by Secretary Butterworth, of the meeting of the Ohio Gas Light Association, goes to show that the "baby" is still in the field, and is lustily growing. The paper list is full of promise, for the announced selections are on topics that ought to provoke discussion. The surety that meeting room and headquarters are virtually one, and that both are up to every demand that possibly can be made upon them, ought to quiet the minds of those who will journey from afar; but who is housed best is the one who provides ahead.

NOTES.—We are in receipt of a copy of a gem of a catalogue just issued by Mr. Frederic Bredel, C.E., which does great credit to its compiler. There are are 64 numbered folios between its covers, and the matter (both pictured and printed) is excellently displayed. In short, it is as effective a catalogue—perhaps the most effective—as any that we ever received.——Mr. S. S. Stratton will, on March 1st, resume his former position of Western Manager of the Goodwin Meter Company.——The annual meeting of the Clinton (Mass.) Gas Light Company was a very satisfactory reunion, for the shareholders knew that their business had prospered in the twelvemonth, and that the prospect for '93 was all that could be desired. The officers chosen were: Directors, Eli Forbes, Herbert Parker, John E. Thayer, John R. Foster and H. N. Bigelow; Clerk, H. N. Bigelow; Treasurer and General Manager, H. N. Bigelow; Superintendent, Wm. H. Spaulding.——The offices of the North Adams (Mass.) Gas Company are to be removed to handsome and commodious quarters in the Adams National Bank building.——On April 1st the gas rate at Woburn, Mass., will be reduced to $1.60.——The Berlin Iron Bridge Company, of East Berlin, Conn., has secured and is now at work on the contract for putting up the new trussed roof on the power station of the Syracuse (N.Y.) Electric Light and Power Company.——Last year the Salem (Mass.) Gas Company increased its main system largely. Mr. Charles F. Prichard is now a Director in the Company.

[OFFICAL REPORT—REVISED BY THE SECRETARY—CONTINUED FROM PAGE 258.]

TWENTY-THIRD ANNUAL MEETING OF THE NEW ENGLAND ASSOCIATION OF GAS ENGINEERS.

HELD AT YOUNG'S HOTEL, BOSTON, MASS., FEB. 15 AND 16, 1893.

FIRST DAY—FEB. 15—MORNING SESSION.

ACKNOWLEDGING THEIR ELECTION TO HONORARY MEMBERSHIP.

The Secretary read letters from Mr. George D. Cabot and Col. James H. Armington, acknowledging receipt of telegrams announcing to them their election as honorary members of the Association, the replies having been received too late to be read at the last meeting.

REPORT OF TREASURER.

The Treasurer read the following report, which was, on motion, received and placed on file:

Treasurer's Report to February 13, 1893.

Balance from last report		$12 74
Derby Savings Bank, balance		137 75
Dues, 1890		3 00
" 1891		6 00
" 1892		81 00
" 1893		264 00
Received from banquet tickets, 1892		204 00
" " badges		2 00
Admission fees		80 00
		$790 49

Cash Expended.

Feb. 18, 1892.	J. R. Whipple	$306 00	
"	Galvin Bros.	12 50	
"	C. J. Buffum	30 00	
"	Whitten & Cass	15 00	
"	F. W. Valpey	7 00	
"	Cash expended, sundries	11 81	
"	T. P. Nichols	40 75	
"	Galvin Bros.	12 00	
"	C. F. Jones	30 00	
"	C. F. Prichard	200 00	
Cash on hand		125 43	
			790 49
Deposit in Derby Savings Bank			500 00

C. F. FRICHARD, Treasurer.

REPORT OF AUDITING COMMITTEE.

BOSTON, February 14, 1893.

The undersigned Auditing Committee report that they have examined the vouchers and compared the same with the report of the Treasurer, and find them to be correct.

Z. M. JENKS,
E. C. LEARNED, } Committee.

COMMITTEE ON NOMINATIONS.

The President appointed as the Committee for the Nomination of Officers for the ensuing year: Messrs. Horace A. Allyn, F. C. Sherman, Charles F. Spaulding, Henry B. Leach and N. W. Gifford.

PROVIDING FOR CORRECTING THE ANNUAL MEETING DAYS.

The President—While the Committee are preparing the list of officers I will bring up a matter to which the Directors desire to call the attention of the Association. They passed a resolution requesting authority to change the date of our annual meeting whenever the third Wednesday of February comes, as it does this year, on Ash Wednesday.

Mr. Nettleton—I move that the sense of this meeting is in favor of the resolution presented by the Directors.

Mr. Stiness—I second the motion.

Mr. Nettleton—I am responsible for the matter coming up in this shape. Once before, I think six or eight years ago, our meeting and banquet came on Ash Wednesday, and I know that quite a number of our members regretted the fact at that time. There is, of course, in every Association of the size of this, a number of gentlemen who have conscientious scruples about attending a celebration of the sort that we are to have to-night on Ash Wednesday; and for the sake of that minority it would seem desirable that the Association should make a change. But, beyond the wishes of the minority (in which I share), I think the Association would take a much more dignified position to avoid holding a celebration in the nature of a banquet on a day which is, to a large part of the Christian world, a holy day.

Mr. Stiness—I did not think about this matter coming up in this way. I simply suggested to my friend Nettleton that I was sorry the banquet came upon Ash Wednesday. I do not propose to set up any claim here that "I am holier than thou," or to suggest that my religious serenity will be at all disturbed by anything that may occur at our banquet to-night; but this day is recognized by the civilized world, and is a day which is growing each year more important in the public estimation. As I say, I did not know this matter was to come up; I did not think of it yesterday, or I would have studied my catechism a little closer and ascertained the exact fact, but it is my recollection, and in it I am quite positive, that the third Wednesday of February is the earliest in the month on which Ash Wednesday can occur; and also that it is only once in a certain cycle of years that it can come on the third Wednesday of February—I think it is some seven years, possibly not so many—for it all depends, as you know, upon the moon, the full moon nearest the March equinox; but it will certainly not come again on the third Wednesday within four years. There may be some question with regard to the construction of our Constitution as to whether we can make this change, but I really hope that as there are many members of this Association who really and conscientiously feel that Ash Wednesday is a day on which all festivities should be laid aside, it will prevail. I have no doubt that my friend Nettleton and myself can get shrived by the bishop if we attend the banquet to night, and I propose to go. But I do really feel that it would be better if our annual meeting could be changed to the second Wednesday in February whenever the third Wednesday happens to be Ash Wednesday. Of the fact that this only occurs once in a certain cycle, and that it cannot occur earlier than the third Wednesday, I am very positive.

The motion of Mr. Nettleton was carried.

Election of Officers.

The President—Is the Committee on Nomination of Officers ready to report?

Mr. Allyn—The Committee recommend the election of the following officers for the ensuing year:

President—Charles H. Nettleton.

Vice-Presidents—Charles D. Lamson and Samuel J. Fowler.

Secretary and Treasurer—Charles F. Prichard.

Directors—Waldo A. Learned, F. W. Norton, A. K. Quinn, J. A. Coffin and E. C. Learned.

I will add that the Committee were very desirous of retaining Mr. Jenks as First-Vice President, but as he positively declined to have his name used again, we had no alternative but to accede to his request.

On motion of Mr. Stiness, the report of the Committee was accepted, and the Secretary directed to cast the ballot of the Association for the election of the nominees recommended by the Committee. The Secretary cast the ballot accordingly, and the nominees were declared duly elected.

The President—I congratulate the Association upon the election of Mr. Nettleton. I think if, instead of proceeding in the usual manner, you had ordered the roll called, and each member had responded to his name and nominated the gentleman he would best like to see in the President's chair, the vote would have been unanimous, with one exception, and that exception would have been the vote of the gentleman whom you have just elected to fill the office of President. (Applause.)

Mr. Nettleton (President-elect)—Mr. President and Gentlemen: I thank you heartily for the honor which you have conferred upon me. Some years ago (I think fully fifteen), a member who occupied the position that I now do, said with a great deal of force and earnestness, "This is the proudest moment of my life." And so I can say, without any hesitation, that this is one of the proudest moments of my life. As you know, I have been devoted to the interests of the New England Association and have done a great deal of work for it in one way and another. I have been much pleased with the way in which it has gone on year after year, growing in membership and influence. To be selected by you to succeed the long list of Presidents, and such men as that list contains, is a distinction of which, it goes without saying, I am very proud. From the bottom of my heart I thank you. (Applause.)

Reading the Papers.

The President—We will now listen to the reading, by Mr. Goodno, of his paper entitled,

EXPERIMENTS ON REMOVING SULPHUR FROM PURIFIED GAS.

Some observations made, when the writer was obliged to use Glace Bay coal for a while in 1890, together with the unusually high results of sulphur tests from nearly all companies in this vicinity the present season, suggested the line of experiments, very imperfectly carried out, that are about to be described.

In the fall of 1890 a freshly prepared lot of home made sponge was in use. At the same time we were using a large percentage of Glace Bay coal and purified about 1,500 cubic feet per bushel, and complaints were coming in of bad smelling gas, and they were not without foundation in poorly ventilated rooms. This complaint was remedied by the use of lime in about equal quantities with the sponge. The lime becoming foul by the formation of sulphide of lime (CaS), combined with the carbon bisulphide, according to the well known English method of deal ing with their sulphury coals.

At this point a new cargo of Pennsylvania coal arrived, which buried a few tons of the Glace Bay in a corner of the shed. When this came to be used some months later, trouble of the same character was looked for, but did not appear, and by crude tests the sulphur did not appear to be present in as large quantities as before. The same sponge was in use as the previous year, and this, it was thought, might furnish an explanation. Old sponge, as is well known, contains free sulphur in amount, according to the time it has been in use, up to as high as 60 per cent.

One of the few solvents of sulphur at ordinary temperatures is bisulphide of carbon, and it would seem reasonable to suppose that under some conditions the converse would be true, and the sulphur in the sponge would take up the bisulphide in the gas.

Among what might be called the residual sulphur compounds, bisulphide of carbon is the only one which is very well understood to be present in the gas. The other ones thought to be present in small quantities are oxysulphide of carbon (CSO), ammonium sulphocyanide (NH_4CNS), mercaptan (C_2H_5HS), and perhaps others.

As a digression, it might be mentioned that two or three gas companies in Germany are now profitably extracting the sulphur, ammonia salts and the cyanides from the spent oxide of iron.

But if the bisulphide were removed, the others are in such small quantities that their presence would make little difference.

With this end in view some attempts were made, and with what success may be judged from the results. An apparatus was set up for burning 8.10 cubic feet of gas per hour in the presence of ammonia gas and condensing the products of combustion by suitable cooling arrangements, as sulphate of ammonia. This liquid was thoroughly washed out with distilled water at each test and the sulphur determined volumetrically. The following results were obtained in the tests:

No.	Temperature.	Grains per 100 Ft.
1.	60°	11.8
2.	50°	5.4
3.	60°	4.4
4.	70°	6.8
5.	80°	6.3
7.	60°	11.1
8.	60°	3.2
9.	60°	10.5
10.	60°	4.8

No. 1 is purified gas from the holder; No. 2 is the same gas after being slowly passed through old sponge at 50° heavily charged with sulphur, but thoroughly oxidized; No. 3 is the same gas with the same treatment, except at a temperature of 60°; No. 4, the same at 70°; and No. 5, at 80°. All of these five are the same gas stored in a small holder. No. 7 is another sample of gas taken some days later from the holder; No. 8 is the same as the last, but after passing through a purifier filled with a mixture of flowers of sulphur moistened with steam. No. 9 is the State Inspector's report on sulphur for Feb. 3d; and No. 10 is the same gas treated in the same way as No. 8.

Now, I am fully aware that so limited a number of determinations can hardly be taken as showing just how much of the sulphur compounds can be removed from the ordinary purified gas, but they indicate that a considerable percentage can be so removed, and none of them show less than 40 per cent., and from that up to 70 per cent., taken out. The best results are shown at a temperature of 60°. Nos 4 and 5 would lead to the suspicion that higher temperatures would drive off the bisulphide, which is a very volatile liquid, boiling at 119° F.

It looks probable that the residue of from 3 to 7 grains may be compounds of sulphur other than bisulphide, in which case the old sponge, or the mixed sulphur and sawdust, has done all that could be expected of it.

The method of eliminating bisulphide with foul lime is well understood. That old oxide, heavily charged with sulphur and thoroughly

revivified, will do the same thing, seems to me theoretically true and borne out by practice. Under this supposition, soon after turning on a fresh box of old sponge, the gas should test low in sulphur, and when the same box became nearly fouled, but not showing sulphureted hydrogen, the sulphur would test high.

On comparing the dates of purifier changes and the State Inspector's reports over several years, I find this to be very nearly true, and the older the sponge the greater the difference between a fresh box and one nearly fouled. For example: October 27, the day before a change of purifiers, sulphur, 18.1 grains; February 3, just after a change, 10.5 grains, under about the same working conditions, coal, etc. With newly made sponge the difference is not so apparent. And all this is borne out by the tests made.

In practical working it seems to me that an extra purifier placed after the ordinary ones and filled with the oldest available sponge, containing the greatest amount of free sulphur, would prove a safeguard against crossing the 20-grain limit, as well as effecting a permanent improvement in the quality of the gas, and likely preventing the many unsightly deposits on ceilings and walls now so frequently seen over gas burners that are in daily use, even where the gas is considered of the first quality.

Such a purifier would need changing only at very long intervals, and the expense would be little after the first cost. Our 20-grain limit is a high one, established many years ago by the English, and it would not be difficult to keep within a much lower one. The companies in Massachusetts for several years have not averaged half that amount. Our electrical friends are constantly reminding the public that their light contains no sulphur or ammonia. Can we not make an illuminant which shall practically have none of these?

Discussion.

The President—We have listened to a statement of very carefully conducted experiments, and, without intending flattery, I wish to say that all of Mr. Goodno's productions are of that character. He gave us a few years ago a very admirable paper on the "Rate of Purification"—(a paper which was a classic in its way). We are fortunate in having papers of that class brought before us. The subject covers a wide field, and the paper is open for discussion.

Mr. C. F. Spaulding—I would like to ask Mr. Goodno if the apparatus he used in those tests was the same as our State Inspector uses?

Mr. Goodno—It was much the same. It was an apparatus gotten up by myself, and is very similar to the English sulphur test, and I was careful to have all the products of combustion thoroughly condensed. It was a trumpet-shaped tube, used to burn the gas under, in the vapor of ammonia (the strongest aqua ammonia)—the trumpet-shaped tube, connected with an air condenser, from that through, or into, a sort of drying-tube, which was filled with moistened glass beads. The vapors had to pass through quite a long line of condensing apparatus, so that there would be very little doubt of their being all condensed.

Mr. C. J. R. Humphreys—I think this paper opens up a subject of a great deal of importance. I take it we do not really understand the process of taking out sulphur with oxide of iron. We know with lime what we have got to do, and how lime will take out the sulphur; but I think we are not quite sure of the process with oxide of iron purification. I take it that it is generally accepted now that the free sulphur does take up the bisulphide of carbon; but the question to my mind is, what compound does it form; and is it not a mechanical rather than a chemical mixture; and are we not liable, therefore, after taking up the sulphur one day, to have it thrown off later. I have had some experience in that direction this winter which has led me to suppose that this is the fact. I would be very glad to have the opinion of the writer of the paper on that point.

Mr. Goodno—I certainly regard the combination as a mechanical one, the same as you would dissolve sugar in water. When you evaporate off the bisulphide you will have the sulphur in the same condition it was previously. I also think that what Mr. Humphreys says with regard to its taking up the sulphur one day and letting it off the next is correct. I think that has something to do with the temperature at which it is purified. Nos. 4 and 5 would indicate something in that direction, because it is the very same gas, only at a higher temperature; and it is very likely that there was more or less of the bisulphide taken up in that old sponge anyway, and that it was there as a solution.

Mr. Lamson—In connection with this it may be well for me to say I had a talk with the State Inspector a week or two ago, and he told me that there had been a great deal of trouble this year with sulphur in gas; that quite a number of companies have gone over the limit of 20 grains. I think he told me that the companies throughout the State averaged a good deal more this year than usual, so that the general average would be much more than 10 grains. I suppose that the companies generally use the same coal that they have been using for some time past—the Youghiogheny and West Pennsylvania coals; and it has seemed probable that some other cause is responsible for the large amount of sulphur.

The President—Since the State Inspector announced the fact that there was a general increase in the percentage of sulphur there have been some tests made by order of the engineer of the Boston Company. Both gas and coal were tested at the different stations. I have not with me the figures obtained by the tests, and I regret that Mr. Addicks is not here to give the results. I will ask Mr. Bush if he can recall any figures obtained as the results of the tests made at that time.

Mr. Bush—I did not see the regular report of those tests, but I think the coal as analyzed at the "Point" and at the "North End" ran very much the same; the sulphur was a little over 1 per cent. As to the other tests I cannot say.

The President—My recollection is that that was some time after the test had been made by the Inspector; and my recollection also is that the analysis of the gas showed that the sulphur was not above the average. I am sure that we would all like to hear from Dr. Wilkinson on the subject.

Dr. Wilkinson—Not being a member of this Association I beg to be excused from speaking. I enjoy very much the remarks made by the gentleman who read the paper, and by the other members; but I ask to be excused from saying anything myself.

The President—We shall have to excuse the Doctor if he insists upon it, but we would all like to hear from him, for we know that his experience has been a large one in this direction.

Mr. F. C. Sherman—The paper read by Mr. Goodno is a very valuable one. I see by the newspapers that some public spirited citizens of Boston have bought up all the coal mines in the Province, and are going down to show our friends how to mine them; and it would seem as though they would probably be willing to give us the coal for the time being; but it is suggested that we shall need to know how to eliminate the sulphur from it. I have had an experience, running back for 20 or 30 years, in using those coals. When I began using them I was purifying by the oxide of iron process; and I had a general howl of complaint with regard to the smell of our gas. There was no evidence of the presence of sulphureted hydrogen; and I was at a loss to know where the odor came from. I visited our old friend, Gibson, then in the Cambridge Company, who was using the same Caledonia coal. He said that one of the Professors at Harvard had recently tested the gas and found 80 grains of bisulphide in it. I did not look any further. I went home and discarded iron purification for the time, and went on to lime, which at once remedied the smell. If we can get over the sulphur question, there may be something in those coals which are going to be put upon the market, as I understand, by the philanthropists of this town.

The President—Do I understand that Mr. Sherman recommends the use of the Nova Scotia coals as a purifying material for removing sulphur? (Laughter.)

Mr. Gifford—I had some of this same happy experience with Nova Scotia coal; and at the same time I was just about changing from lime to oxide purification. When that coal came in the sulphur troubles came with it; and I tried everything I could think of to get the sulphur out with lime, and gave it up. Having suspected the fact, which Mr. Goodno has demonstrated, I filled up some boxes with a bottom layer of spent lime; I thought that perhaps I might catch some of the sulphur which had slid through. I think it helped it a little, but it did not make much difference to me whether I was sending out 40 grains or 50. I changed over to iron, and I did not see much difference in the sulphur left in the gas. There is one point, however, that I think has been possibly overlooked. I think the iron after it is fouled with sulphur, and before it has been revivified, has a similar effect (perhaps not to quite so large a degree) as the foul lime; otherwise I see no explanation why a batch of oxide should improve after it has been in use for a while—which I believe is generally the case. I know where the prime trouble was with me, and that was in the size of my boxes. They were too small. I figured up the other day at what rate the gas was going through and found that it had about one-third of a minute in which to deposit its sulphur as it went through each box. That is too fast for us.

Mr. Bush—I see that I did not quite understand your question about sulphur compounds. I took it as referring to the number of grains of sulphureted hydrogen found by the tests. As to the amount of sulphur compounds in the purified gas, I will say that, after those tests by the

State Inspector, which have been referred to, the amount found in the "Point" Station gas was 15 grains and a fraction; and the average amount of sulphur compounds in the gas at that station was about 12. I think that excess pf sulphur then can be attributed to much the same line of reasoning as Mr. Goodno has set forth. Two purifiers were filled at that time with new sponge, the old being discarded; consequently we had not the usual amount of free sulphur in material which was in service

Mr. Goodno—In reply to Mr. Gifford's criticism I will say I think that when the sponge is foul it seems to cover up the free sulphur so that it is not able to absorb any bisulphide to speak of. I think that was borne out by the observations on our purifiers. I would like to get at the dates of the changes and inspections of some large company, where the inspections occur every month or every week. I think those would be much more valuable. But that seems to be the way with us.

Mr. Gifford—I will say, parenthetically, that it would be easy to get the dates of our changes, for they are every day.

Mr. Coggeshall—I have had some experience this winter with relation to the increase of sulphur. In November the State Inspector reported that we had 14 grains of sulphur. I was then using iron sponge which had been in use for about 18 months. I then discarded the old and put in new. In his report in January for the last of December it was 7 grains—that was with fresh sponge.

Mr. Greenough—I have the advantage of sitting in the immediate vicinity of a gentleman here who is more familiar with chemistry than I am (Dr. Wilkinson), and he suggests to me that it is possible that some of the experiences which have been had with regard to the bisulphide of carbon are attributable to the question of heat. I have never entirely understood why we got so much less bisulphide of carbon here in our purified gas than they did in the English system of purification, where to the oxide of iron purifiers they add sulphide of calcium purifiers to get out their bisulphide. It has been suggested to me that one reason is that the highly heated retorts make very much less of bisulphide of carbon than do the retorts which are of lower temperature—that with the high heats you make sulphureted hydrogen, and with lower heats you make the bisulphide of carbon; and that with the English method they form large quantities of the bisulphide of carbon which they have to get out; whereas, with our higher temperatures we make sulphureted hydrogen, which is taken out readily by the oxide of iron. This does not affect, except indirectly, the question of this treatment by Mr. Goodno, which is certainly most interesting, and is the strongest argument for the homœpathic system of doctoring which I have ever heard advanced.

On motion of Mr. Stiness, the thanks of the Association were voted to Mr. Goodno for his paper.

The President—We will next hear the paper, by Mr. Robert W. Bush, of Boston on

REPORTS.

Mr. President and Gentlemen of the New England Association: My purpose is to outline as briefly as possible the value for gas works of a regular system of daily reports; so full, that they give complete record of all occurrences, in such form that daily working is readily shown and past reports may be conveniently filed—daily reports to be condensed in one for the month; monthly reports to be summarized in an annual.

Reports may be divided under two heads: (*A*), those for routine work; (*B*), those for special work.

Class A consists largely of printed forms for recording manufacturing data, such as make, illuminating power, coal and coke statements, etc. The blank shown (see Table I.) is in use at Commercial Point, and has no particular features to commend it, other than being a sample. The second form (see Table II.), which is bound, is for a combined daily and monthly report. The two open pages show the daily working results for one month. The lower portion of right hand page duplicates the form of Superintendent's monthly report, one copy to be sent to the Treasurer and another to Engineer. In addition are used blanks for foremens' and gatekeepers' reports, telephone messages, orders, etc. Also, company accident forms, which are valuable, as they ensure full reports on the important points, leaving out the unimportant. A foreman who fills out printed forms instinctively drops into a way of watching out for answers to the questions he knows will be asked. In case of accidents, in fact of all unusual occurrences, it is particularly useful to carefully note the time.

Objection is made that reports take *too much time;* that to properly fill out so many would require extra office help. In one works where this cry was raised I know, from personal experience, that now general satisfaction, and not an extra clerk, is the result of a system of reports. One wishes to get some exact figures on the cost of rebuilding a simple bench of 6's. This labor is not kept distinct from other "works' repairs. A most capable works' foreman, thoroughly versed from bricks to meters, is accustomed to rebuild the benches. When asked for the time spent he at first took it as a direct slight on his work. He had always done "so and so," and "though the Company was dissatisfied, he didn't see how he could do any better." A more faithful man than this foreman is not to be found, but the instance shows that where inquiry is taken as indicating dissatisfaction a little of the report system would be beneficial. And in all reports containing figures of cost, make, etc., have a corresponding place for the previous year's work for comparison.

The general system of reports, in use in the Boston Gas Light and allied Companies, as devised by the Engineer, shows the advantage of a scheme which, both in completeness of form and method of filing reports, leaves little to be desired.

A form which was first introduced at the North End station, and now used at Commercial Point, brings me to *Class "B,"* or reports of special work.

Daily Memoranda.

Day and date.....

Mr. Blank,

Dear Sir:

In addition to work reported on printed form elsewhere, would report as follows:

....

Respectfully,

.....

Note.—Report daily on this blank all matters needing attention or any unusual occurrences whatever.

The intention is to have foreman fill these out for each day, turning them in early next morning. In addition to this, each foreman reports daily the number of men available for duty and probable work for each. Consequently, before the superintendent starts on the "grand rounds" he has a general idea of what is going on, and fewer questions are necessary. My first experience with "daily memoranda" blanks was that many came in indorsed "Nothing new;" or, sometimes, monotony varied, "I have nothing new to report." I suggested there were several interesting things going on. "*You* surely can do as well as Mr. Blank (another foreman), he finds something to say." I get good reports. I believe that any man who has important work to do should report its progress and completion to his superior. At Commercial Point a water seal is carried in the hydraulic mains. The tar, which runs off through the seal box into a receiving tank, forces water back into main to keep up the seal. The possibility of any mishap from improper handling of valves is very small, provided the man who runs tar off from receivers reports (as he finishes drawing each section) to his foreman, who then inspects seal, etc. Reports tend to increase a man's efficiency, and, with foremen, they teach reporting everything of unusual nature, and do not leave the option of deciding whether a thing is or is not of sufficient importance to mention. The manager is pretty sure to hear what goes on.

Now, there must be some convenient form of summarizing these special reports of class "B." At Commercial Point this is done in a "Daily Superintendent's Report," which is a record of personal notes and general condition of the station. I have tried systematic note-taking and copying of notes. For a while all went well. For the sake of ready reference I find it convenient to copy these notes in an indexed book, by topics, rather than to write in diary form. But as I had less time to arrange and copy, I finally found myself in possession of a large fund of material (value doubtful), without knowing just where to put my hand on a special subject. I say value doubtful, because I think personal notes are apt to contain a large amount of matter which the writer finds, on looking back, of no earthly use to himself or any body else. Nor is there anything new about the diary with one week written and next two omitted. Accordingly, I advocate as a good and sure method of recording facts a daily report; the various things of importance to be written down under the proper dates; a summary of any experiments recorded; so also with any other data deemed of interest. An impression of this report is then taken in a copy book and the original forwarded to the Company's chief engineer. If he has any orders to give regarding subject matter he will endorse them on the report, which is sent back to writer. On the execution of these orders, report to be properly stamped and returned. The engineer then has a complete record of the matter, which is filed away with the other daily reports of the station, and thus he keeps in constant touch with the different works.

While the worth to the engineer of such a system is obvious, it is also

Table I.

THE BOSTON GAS LIGHT COMPANY—DAILY REPORT—COMMERCIAL POINT STATION.

Day.			Night.			Temperatures.	6 P.M.	6 A.M.	Pressures. 6 P.M.	Pressures. 6 A.M.
Time.	Make.	Ill. Power.	Time.	Make.	Ill. Power.					
7			7			Friction No. 1. Scrubber Inlet				
						Friction No. 1. Scrubber Outlet				
8			8			Friction No. 2 Scrubber Inlet				
						Friction No. 2 Scrubber Outlet				
9			9			Exhauster				
10			10			Condenser No. 1 Inlet				
						Condenser No. 1 Outlet				
11			11			Condenser No. 2 Inlet				
						Condenser No. 2 Outlet				
12			12			Tower Scrubber Inlet				
1			1			Tower Scrubber Outlet				
2			2			Standard No. 1 Washer Inlet				
						Standard No. 1 Washer Outlet				
3			3			Standard No. 2 Washer Inlet				
						Standard No. 2 Washer Outlet				
4			4			Purifiers Inlet				
5			5			Purifiers Outlet				
6			6			Meter Inlet				
						Meter Outlet				
T't'l			T't'l			Governor House				

Day make.....

Night make.....

Total make.....

Coal Used.

American..... ...tons

Cannel..... .... "

Total..... "

Naphtha.....gallons

Retorts charged.....

Burning out.....

Make per lb..... Day.... Night.. Average

" " Retort.....

Candle Power.... Coal.... Water.. Mix ....

.....

Ammonia .....

.....

Changed Purifier.

Time.....

Meter .....

" last change.....

Gas purified.....

" " per bu.....

Coke Used.

Stack.	Bushels.	Percentage.
H		
I		
K		
L		

Holders.

		Sect.	Sheets.	Rivets.
1	6 P.M.			
	6 A.M.			
2	6 P.M.			
	6 A.M.			

Machinists ..... Masons ..... Carpenters ..... Wharf .....

.....189....

of great advantage to the writer of the report, who is taught to be accurate and concise. Feeling that his report is to be read and criticised by his superior, he will take greater care and find an incentive for better work. A written description and sketch (which is most valuable in all notes), is a good test of knowledge on the subject. I remember once starting in to make a carefully prepared oral report, which was brought to an untimely end by my being told, "Go, write it up." The advantage of the written report as a reference is clear—any figures to be condensed as far as possible in tables. Of course, the copybook must be carefully indexed to date by subjects.

Endeavoring to "point a moral" and, at the same time, to try "to adorn a dull tale," I take a few figures from the "copybook."

First.—On the average life of retorts.—The maximum average at Commercial Point for three benches of 6's is 951 days. The next best average, of 919 days, is for four more benches in this stack, charged at the same time. Benches are full regenerative. The best work of 54 retorts, set in 9's, is an average life of 582 days—not so good as the 6's, one reason being higher heats. Regarding the comparative working of 9's and 6's, would say that during the month of January, 1893, stack K (6's) consumed 27.3 per cent. of coke made, and L (9's), 21.5 per cent., a gain of nearly 6 per cent. in favor of L. Though both are German furnaces, L has higher regeneration than K, there being two more returns for secondary air and outgoing gases. Average life, from table in notes, of 600 retorts of different make, is 384 days.

Second.—Time required for steaming retorts.—To remove carbon from some of the above retorts, time is given by table (see table III), from which it appears that the average time to steam 1,049 retorts is 14 hours, 20 minutes. The average length of time which these retorts ran before the carbon deposit necessitated steaming was 44 days. The apparatus used consists of a half-inch steam pipe, which has on the end a nipple 3 inches long, with one-eighth inch hole. Nipple is thrust into an open 2½-inch wrought iron pipe, which rests along bottom of retort for about 7 feet. As carbon is removed from back of retort, a pipe about 18 inches long is substituted to burn out mouthpiece end. In every bench of 9's we have two "through" retorts, bottom and middle, which are drawn directly into generators. No steam is used in these retorts, the back lid is removed and the front slacked off and standpipe opened. Carbon is burnt out more quickly than from the other retorts using steam. On removing carbon, beginning November 13, 1892, ten through retorts required 75 hours, an average of 7 hours, 30 minutes; and 41 ordinary retorts in the same stack took 478 hours, averaging 11 hours, 40 minutes. Retorts for naphtha have frequently required 30 hours steaming. Experiment has been tried of using second hand 2 inch boiler tubes, instead of 2½-inch pipes, but they were too small to admit proper supply of air, which accounts for the steaming of January 6, 1893, requiring per retort 18 hours, 40 minutes—more than two hours above the average.

While on the subject of retorts, it may, perhaps, be admissible to say a few words regarding self-sealing lids. A number of different kinds have been tried from time to time with more or less success at Commercial Point. We have lately fitted up an entire stack, with the lid devised by our foreman machinist. The accompanying blue prints show the design. In print A, figures I and E show the lid as open and shut respectively. Figures 8 to 11 give the details of supporting and closing

Table II.

BOSTON GAS LIGHT COMPANY,

Day of Month.	Pounds of Coal Carbonized.					Naphtha Gallons	Cubic Feet of Gas Made.								Gas Purchased.	Candle Power.			Furnaces in Use.	Retorts in Use.		
	6 P.M.	6 A.M.	American.		Total.		Per Pound of Coal.			Per Ton.	Per Retort	Day.	Total Yield. Night.	Total.		C. G.	W. G.	Mixed.		Coal.	Naphtha	Total.
							Day.	Night.	Av'rage													
1..																						
2..																						

Day of Month.	Gas Sent Out.					Coke Account.									
	Boston.	Roxbury.	Dorchester.		Total.	Made. Tons.	Consumed.				Sold.			Stock.		
							R. H. Fur.	R. H. Engine.	Boilers, etc.	Total.	Ledger.	Cash.	Total.	Gain.	Loss.	Total.
1..																
2..																

Table II.—*Continued.* On page of Ledger opposite to above.

COMMERCIAL POINT STATION.

Day of Month.	Time.	Meter.	States of Holders.			Temperature of Works.																			
						Friction Scrubbers.				Exhauster.	Condensers.				Scrubbers.						Purifiers.				Meter.		Governor.	
											1.		2.		Tower.		Standard No. 1.		Standard No. 2.		No 1.		No. 2.					
			No. 1.	No. 2.		Inlet.	Outlet.	Inlet.	Outlet.		Inlet.	Outlet.	Inlet.	Outlet.	Inlet.	Outlet.	Inlet.	Outlet.	Inlet.	Outlet.	Inlet.	Outlet.	Inlet.	Outlet.	Inlet.	Outlet.	Inlet.	Outlet.
1..	6 A.M.																									
	6 P.M.																									
2..	6 A.M.																									
	6 P.M.																									

Feet Gas, Pound Coal, ...
Feet per ton..... .....
Made per Retort..... .....
" " Man..... .....
Average C. P..... .....
" Spec. Grav.. .....
" Ammonia... .....
" Sulphur..... .....
" Car. Acid ... .
" Oxygen..... .....
Purified Bus. Lime... .....

Monthly Statement.

	Coal.	American.	Cannel.	Albert.
On Hand.....				
Received.....				
Used.....				
Sold.....				
On Hand.....				

	Tar, Gals.	Liquor, Gals.	Lime, Bus.	Naphtha, Gals.	Residuum, Bbls.
On Hand.....					
Made or Received					
Used or Sold			P		
Used.....			L		
On Hand.....					

Coke.	Tons.	Bushels.
On Hand.....		
Made.....		
Used, Retorts, etc.		
" Disc. Coal..		
" Generators..		
Sold.....		
On Hand.....		

Gas	
Cu. Ft. on Hand.....	
" Made	
" Bought.....	
" Sent Out.....	
" On Hand.....	
" Sold Roxbury...	
" " Dorchester.	
" " So. Boston.	
" "	
Total.....	

Table III.

STEAMING RETORTS.

Date Beginning Steaming.	Stack.	Number of Retorts.	Hours of Steaming.	Average Time of Steaming. Hours. Minutes.	Time from Beginning One Steaming until Next.
Dec. 29, '91.	H	48	790	16—20	.....
Average....	H	48	790	16—20	....
Mar. 3, '91.	I	43	470	10—50	.....
Mar. 30, '91.	"	43	585	13—00	27 days.
May 5, '91.	"	46	1,009	21—50	36 "
May 23, '91.	"	47	819	17—20	18 "
June 29, '91.	"	44	833	18—50	36 "
Aug. 3, '91.	"	41	791	19—20	35 "
Sept. 28, '91.	"	45	612	13—30	56 "
Nov. 16, '91.	"	41	516	12—20	48 "
Dec. 28, '91.	"	40	684	17—10	42 "
Feb. 15, '92.	"	40	621	15—30	48 "
Average....	I	430	6,940	16—30	38 days.
Jan. 5, '91	K	42	725	17—10	.....
Mar. 9, '91.	"	42	697	16—30	64 days.
April 23, '92.	"	42	689	16—20	45 "
Nov. 25, '92.	"	42	583	13—50	56 "
Jan. 6, '93.	"	42	782	18—40	42 "
Average....	K	210	3,476	16—30	51 days.
April 25, '92.	L	44	295	6—40	.....
June 6, '92.	"	54	349	6—30	42 days.
July 11, '92.	"	54	514	9—30	35 "
Aug. 22, '92.	"	54	576	10—40	42 "
Oct. 3, '92.	"	53	788	14—50	42 "
Nov. 13, '92.	"	51	556	10—50	41 "
Dec. 26, '92.	"	51	573	11—10	43 "
Average....	L	361	3,650	10—00	41 days.
Gen'l aver..	.....	1,049	14,856	14—20	44 days.

mechanism, while 2 shows the peculiar shape of lid itself. Print B shows the lid more clearly on a larger scale, with a change in the method of closing, now effected by a screw.* As shown by small model, the lid itself is deeper than others of its class and the center hollowed in. It is nearly of double-S shape, which gives good power of expanding to make a tight fit against a warped mouthpiece face—the chief advantage of the lid.† A lid fitting tightly, except in one place (where it may be of a sixteenth of an inch), will, when heated, come up into place. Another advantage is that in closing there is no strain downward on the mouthpiece, tending to pull it off. Lid is shut by means of a cam and lever, or by key and screw, as mentioned above. Moving lever (attached to Tee-iron supporting lid), rubs lid up and down against the mouthpiece face, serving to remove any dirt. There is also

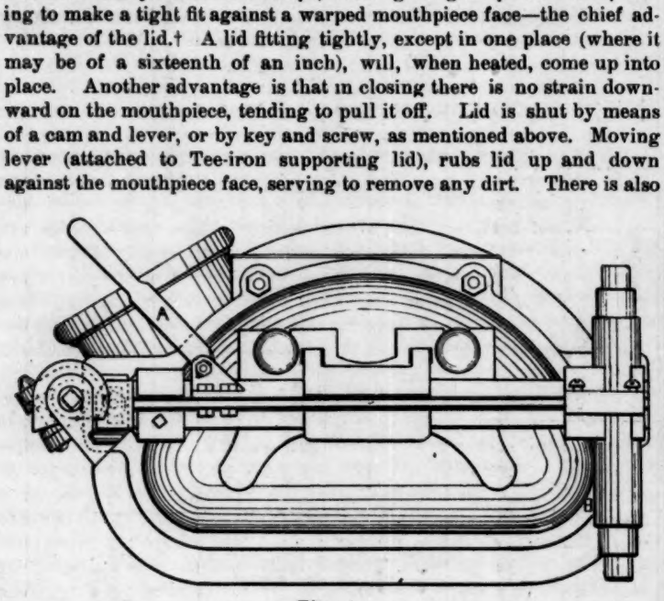

Fig. 1.

an arrangement at the end of Tee-iron for adjusting the throw of the cam. Though this lid is intended for use on a planed mouthpiece, we have successfully tried it on an ordinary rough one in a stack with luted lids. The tar assists to make a tight joint. There is one axiom with self-sealing lids, keep them clean and in repair; patching does not pay.

While I have ventured to state that some incentive is advantageous in note taking, I do not advance the theory that the many superintendents present, in order to keep notes in the report form, must needs cultivate a consulting engineer. Behold the incentive at hand! Why not send a quarterly or semi-annually extract of daily reports to the "District Association," and make some work for the stenographer! When

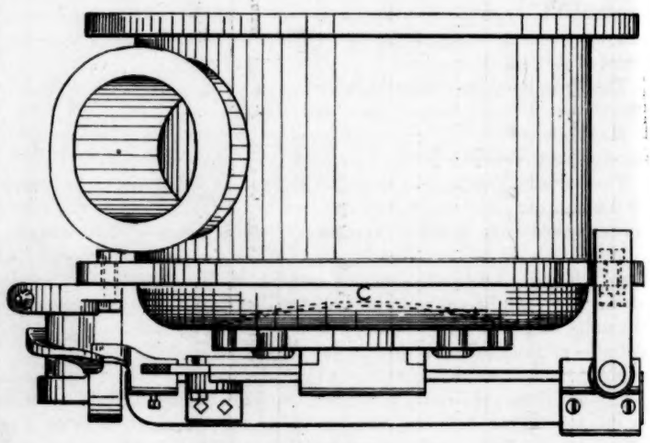

Fig. 2.

we hear so much of co-operation, it seems as if some such scheme might be made of advantage to the industry, and the reports containing records of experiments made and processes tried, properly filed and indexed, might be made an interesting feature of a Gas Association library. They might even aid a committee on Scientific Research, not to mention the help to the manager when casting about for material for his "Annual Report." He can go back to educational first principles and take up his copybook. Indeed, it is quite possible that the bound and indexed daily reports, with short summary and recommendations, might form an acceptable annual report to the Directors.

I thank you, gentlemen, for your kind attention.

Discussion.

The President—The suggestions made by Mr. Bush are very interesting and valuable; and I think the systematic making of reports is as important for a small as for a large company. Even in a company where the man at the helm has to do everything himself, from shoveling the coal to taking the indices and making out the bills, even if he has no man under him, I think it would be advantageous if he made out a daily report *to himself;* and I believe that, after the first month of such work on his part, he would surprise himself by reading over the record. The subject is open for discussion.

Mr. Anderson—I was very much gratified with Mr. Bush's paper. I think the idea is a good one. I coincide with everything he has said; and I coincide with the remarks of the President, except as to his suggestion that the manager make a report of himself. That I object to. I do not think it would read well.

The President—I said report *to* himself.

Mr. Anderson—We have at our works a manufacturers' journal, which takes in a great many of the items that are stated in this paper; and every day since I have been at the works I have kept a day journal in which I have recorded every man's time in such a way that I know what every man is doing at certain hours of the day. That I keep at my office at the works. Then I have a record of everything that is done outside, and that I turn into the Company. For instance, in the labor of repairs to a main, or the amount it costs for repairing certain leaks, I have a diagram of every place in the works and the distance the main is from the sidewalk. I take a diagram of those measurements for a sleeve, or for a supply pipe put in, and for everything of that kind, and I make a plan and keep it. I try to keep everything of that kind, and I think the idea is an excellent one.

Mr. Bush—I would like to ask Mr. Anderson if he ever has a report from his street foreman something like this, "Looking for leak three days;" and whether he does not have to go and straighten out the exact position of that leak more than he would if his foreman should start in by saying just where the leak was, the measurements, etc., and turn it in all at once.

Mr. Anderson—If I am not present when the leak is discovered my foreman takes a diagram right there on the ground, turns in the diagram

*Since the reading of the paper the author has kindly furnished us with drawings (see Figs. 1 and 2) which show the general design of lid and attachment. At *A* is shown the lever by which the lid is moved up and down against the mouthpiece face, to clean away dirt; dotted lines at *C* show the concavity of the lid.

† I regret that model is so small, but think that if I send it round for examination the different parts and principle will be plainly understood.

and measurements to me, and I keep a record of the time, what it costs to find that leak, what was used in repairing it, and all that data, so that if at any time my treasurer asks me what it cost to repair a certain leak I can tell him.

Mr. Bush—I will say I did not intend to cast any reflection upon Mr. Anderson's foreman, but simply referred to the principle of the reports. I think that the more a man gets into the regular form of sending in all measurements the easier it will be all around to keep the record.

Mr. Sherman—I would like to hear from Mr. Slater, as he has had a great deal of experience in this direction. I think that the superintendent of his works makes about 120 items for a day's work, and it covers a great deal of information.

The President—Mr. Slater does not seem to be in the room. Perhaps Mr. Slater, Jr., can answer the question?

Mr. Slater, Jr.—I do not think I understand the question quite well enough to answer it.

The President—Mr. Sherman asks for some information with regard to the manner in which reports are kept in the Providence Company, more especially with regard to reports from the heads of departments.

Mr. Slater, Jr.—Our daily reports from the works are made out in a form which is intended to cover everything, so that the general manager at the office can learn from them all the details of the work covered by the daily reports. I do not know that I can answer the question more definitely, unless a more specific question is asked.

Mr. Allyn—I happen to have with me a package of blank reports that I brought from the printer this morning, without intending to use them at this meeting; but perhaps the form may interest some. It is the form of report of a leak. It is a report of a leak to the foreman, and then his return after the leak has been stopped. This is the form:

Report of Leak.

No. 1. CAMBRIDGE, February 1, 1893.

To J. Smith, Foreman.

10:30 A.M. A leak is reported at 100 Washington street.

Reported by Police.

Return.

Report received February 1, at 11 A.M.

Commenced work at 12 A.M.

Leak secured at 4 P.M.

3 men. 12 hours. 4 inches pipe. 12 feet from line of estate.

Main, south side of street. J. SMITH, Foreman.

We find that in many cases, where the pipes have been laid a great many years, we have lost the record of just where they lay. Some times we think the pipe is in the ordinary place, but find it under the edge of the sidewalk, or we may find it in the middle of the street. These reports furnish very useful data for locating the mains where we are not positive just where they do lay, or on which side of the street the main is to be found.

Mr. Sherman—The importance of keeping such information can hardly be exaggerated. We recently had an illustration of it in our business. A gentleman brought in a bill for $500 for killing a tree on his premises. The tree had been dying for some years—in fact, *some times* a tree dies where there are no gas pipes—but he insisted that it was a leak from our pipe that killed that tree. But we had the record evidence to show, for we had, three years before, bared his services through his yard to the main; and in that way we were able to show that there was no leak in the vicinity that could have reached any tree in front of his house. If we had not had that record as evidence we would have been unable to convince him that we had not killed his tree; having the record, we were able to satisfy him at once that the tree died from some other cause.

The President—We would like to hear from Mr. Lamson.

Mr. Lamson—I have nothing to say, except that I am a firm believer in systematic reports.

On motion of Mr. Allyn the thanks of the Association were voted to Mr. Bush for his paper. The Association took a recess until 2:30 P. M.

FIRST DAY—AFTERNOON SESSION.

The Association met at 2:30 P.M.

The Secretary read the following telegram:

"Thanks for your greeting. Kindly wishes to all."

"GEORGE D. CABOT."

PRELIMINARY REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

Mr. Greenough—As representing the Committee on the President's Address, I will say we are not ready to make our report, but I will move that the President be authorized to appoint the customary committees to draft the proper resolutions upon the subject of deceased members.

The motion was carried, and the President named the following Committees: As to George A. McIlhenny: Charles H. Nettleton, Samuel G. Stiness, George B. Neal.

As to Edgar H. Woodman: John M. Hill, Fred. W. Norton, W. H. Hayden.

As to A. M. Copp and F. H. Odiorne: A. B. Slater, N. W. Gifford, H. A. Atwood.

As to A. M. Norton: C. J. R. Humphreys, F. C. Sherman, F. S. Richardson.

(To be continued.)

Trolley Wires for the Illuminating of Street Pageants.

The *Street Railway Review* says that in Wilmington, N. C., the Street Railway Company, of which John H. Barnard is General Manager, exhibited during a recent trades' parade an extremely simple solution of the problem of satisfactorily illuminating floats for night parades. For the interesting occasion, the Wilmington Street Railway Company offered to take contracts for lighting the floats with incandescent lamps. By several this offer was accepted, and so gratifying were the results that it is most probable that hereafter this method will be exclusively employed. To obtain contact with the trolley wire a very simple trolley was devised. A piece of stiff spring brass wire was coiled in two planes, the lowest coil being fastened to the float. The horizontal coils afforded ample side motion, while the vertical ones gave good upward pressure against the trolley wire. From this, various circuits were led about the float, the lamps being connected up five in series. The ground connection was very easily obtained by a little car with iron wheels six inches in diameter, built to fit the gauge of the track, which was towed under the wagon on which the float was built.

Thirty 16 candle power lamps were found to give a splendid illumination to a very large float, and this, with the simplicity and small cost of the arrangement, makes it quite certain that practically all floats shall be so lighted in the annual parade next year. As their own exhibit the Wilmington Street Railway Company arranged a float on which was seated Benjamin Franklin drawing electricity from the clouds. His kite string consisted of a light bamboo pole, on the end of which was a broad sheet copper contact shoe. This shoe was entirely hidden by the kite, while the bamboo pole was concealed by a dark colored covering, from which 14 incandescent lamps protruded. The fifteenth was dropped and illuminated the Leyden jar. This float being built on a flat car, the ground contact was obtained through its wheels.

Underground Construction.

Mr. W. A. Tower, in a paper read before the Canadian Electrical Association, remarks that the first work of burying wires in America was done in Washington, D. C., but he believed the system did not work satisfactorily, and is to be, or has been, remodeled. The next work of any importance was done in Chicago, when the drawing-in system was adopted for telephone work. A drawing in system is one where any number of ducts can be laid and used at any time without having to dig them up, or to lay the cables at the time the conduit is built. This system does not necessitate the use of any particular material or make of conduit.

In building an iron pipe conduit, after the trench has been dug, a layer of concrete about 3 inches thick is laid, wide enough to allow an inch or more between each pipe, and 3 inches on each side. A row of pipes is then laid, varying in length from 14 to 22 feet. These are screwed together by regular threaded couplings. After this is done, concrete is put on, filling up the spaces between the pipes and the 3 inches on each side. The concrete is then leveled about 1 inch above the pipe. Another row of pipe is then put down, and the process repeated until the proper number of ducts has been laid. The top layer of the pipe is then covered with 3 inches or more of concrete, and the trench filled in.

The cement lined pipe comes in lengths of about 8 feet, with beveled male and female ends, and is laid in the same way as the iron pipe. The joints are made by bringing male and female ends together, and covering the junction with neat cement.

The Wyckoff conduit consists of pieces of thoroughly creosoted wood, about 8 feet, 4 inches long, 4½ inches in diameter, with a 3-inch hole through the center, the ends counter-bored and tenoned. There is first laid a 1½-inch board in the bottom of the trench, which is wide enough to hold the proper number of ducts. The ducts are then laid on this,

layer by layer, the joints being made by joining the male and female ends about half the length of the tenon, when hot pitch is poured in, and the lengths then driven together. After the ducts are all laid, another board is placed on top to protect them from the picks of workmen digging across the line of the conduit.

This all appears very simple to those who have had no experience with this work, but some of the difficulties which have to be overcome are by no means trifling. In the first place, after deciding upon the route to be followed, it is necessary to find out whether there is room enough on the street to lay the conduit, as the gas mains, water mains and other pipes may have been laid before the conduit was thought of. The engineer or superintendent of construction applies to the city and gas company for the location of their mains, which information, as a rule, is given very graciously, but in three out of five cases the position given is not correct within two or three feet, and about the only use made of the information is to tell on which side of the street the mains are, and, consequently, test holes have to be dug to locate the pipes before the work can be started. As a general rule the bottom of the conduit is put below the level of the gas mains, and when a corner is reached it is often necessary to carry part of the ducts over the mains, and part under them. In some of the larger cities in the United States where there are two or three gas companies, the conduit trenches at street intersections often have to be as deep as 10 feet, on account of the numerous pipes that cross at such points. The manholes are usually located at street intersections, and consist of chambers about 7 feet long, 5 feet wide, and 7 feet deep, with brick walls laid in cement, and a cast iron head and cover generally made to bolt down tight to keep out water. After the conduit is laid and manholes built, an entrance must be obtained to the telephone building, which too often has been constructed without proper consideration for the handling of cables. The largest telephone exchange in the United States has this fault; the first cables were pulled into the bottom ducts, and it was found that it would be impossible to ever get at them again. The consequence is, that if a cable gives out it will have to be left, and the duct sacrificed. I do not think there are two exchanges which have the same appliances for handling cables, every engineer having a different idea as to how it should be done, and as yet a perfect system has not been adopted anywhere.

In pulling in cables, we first have to get a rope through the duct. This is done with wooden rods, about 4 feet long, equipped with malleable iron couplings. A rod is inserted into the duct which is to be used, a second one jointed on to it, and both pushed into the duct; this process is repeated until the rods extend to the next manhole. A rope is attached to the first rod, and the rods and the rope pulled back into the first manhole, and the rods uncoupled as they are pulled in. The rods are handled quite easily, two men being able to rod 400 feet of conduit in about 15 minutes. The rope is then fastened to an iron clevis, about 10 inches long, made to fit the cable, and riveted on to the end of it. The reel of cable being on the holder, the cable is then ready to pull in, which is done with a winch geared to an upright shaft with a sliding drum, and so arranged that the drum can be placed exactly opposite the duct through which the cable is to be drawn, thereby avoiding pulling the cable around, or over any corners of the conduit.

After the cables are in, the splicing has to be done. This operation requires great care, and only thoroughly reliable men should be employed. In making a splice, the cables from each way are bent into their proper places in the manhole, and then cut to the proper length, which allows the ends to lap about a foot. The lead is then stripped off each end the length of the lap, and a piece of lead pipe, large enough to cover the wires when spliced, is slipped over one of the ends, the wires are separated in pairs and turned back as far as the lead is stripped.

Two pairs of the bottom wires, one from each end, are then taken, and the insulation stripped off, care being taken not to nick the wires. A paper sleeve is put on one end of each wire, the wires twisted together, and the sleeve slipped back over the junction of the wires. After all the pairs are joined in this way, they are boiled out with hot paraffine, to vaporize any moisture that may have been absorbed while making the splice. A piece of paper is bound around all the wires to keep the paper sleeves in position; the lead sleeve is now pulled over the splice, and a regular plumber's joint wiped.

If a workman is careless in making a splice he is liable to leave a wire open, or he may not boil it out thoroughly, and so leave enough moisture there to bring the insulation of the cable very low, and it is difficult to locate such a fault exactly without opening splices until it is found.

Before a splice is started, the cable is tested back to the office, or to the point from which it starts, for open and grounded wires; the length to be spliced on is also tested in the same way, and if any such wires are found they are spliced together, so that although there might be a faulty wire in every section of the cable there would still be only one bad wire from end to end. If the testing were not done, a faulty wire in one section might be spliced to a good wire in the next, and so on; in which case the more sections of cable the more faulty wires there would be in the entire length. After all the splices are made, and the pole or building terminal put on, the wires are tested out and put on corresponding binding posts at each end. A capacity and insulation test is made, and if it is up to the standard the cable is ready for use. At present the insulation must be at least 500 megohms per mile, and the capacity at most .08 microfarad per mile.

SPECIAL ENGLISH CORRESPONDENCE.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, February 10, 1893.

Mr. W. H. Preece on the Progress of Electricity.—The Progress at Bath and Elsewhere.—The Lighting of the House of Parliament.—Railway Rates.

Mr. W. H. Preece has been at it again. The *it* will be at once understood to mean the puffing of the electric light, coupled with gratuitous slaps at the gas industry. We English folks are accustomed at times to associate "tall talk" with the other side of the Atlantic. But Mr. Preece is a Goliath at this sort of thing, and could confidently challenge the world. He has been elected President of the Institution of Electrical Engineers, and in that position delivered the usual inaugural address a few days since. While treating of the progress of electricity in general, he mentioned that of the electric light in England, and accounted for its comparatively slow development by referring to "the operations of a monster called into existence by the limited liability legislation of recent years—the rapacious financial promoter—whose plunder in one year of our period far exceeds in amount the sum of all the thefts of all the highwaymen and burglars that were ever hung. He has ruined the prospects of private enterprise." Mr. Preece must have forgotten for the moment that the operations of the "monster" depend for their very existence upon the reports of experts having a high standing and letters after their names. But he appears unable to notice anything, except the windmill, often an imaginary one, against which he directs his charge, after the fashion rendered famous by the immortal Don Quixote. After this he recounts the various improvements in lamps, distribution, etc., leading up to the grand climax of electricity being supplied at a price equivalent to 2d. per 1,000 cubic feet of gas. He very correctly rounds this off as being beyond the dreams of the gas men. To this might be added "or anyone else, except Mr. Preece." To follow the address, however, we will learn how it is that the gas man cannot realize the possibility of electricity at the equivalent of 2d. per 1,000 cubic feet. "The most marked features of this great industry are the ostrich-like blindness of the gas manager, who buries his foresight in his fat dividend, and the childish wailing of their technical journals." Really I owe an apology to your readers for not having called their attention to these most marked features—but, stop! as one of the class afflicted with ostrich-like blindness, I cannot be expected to do so. Having referred to the profitable character of electric light investments, and the increase in its adoption, he next proceeds to extol it as essentially the poor man's lamp. But this is enough of the inflated hyperbolical language adopted by Mr. Preece. It may amuse, but cannot do more.

Some interesting information as to this profitable and cheap system is afforded by a copy of a Bath newspaper, kindly forwarded to me by a friend, from which it appears that the electric light consumers in that ancient city are greatly exercised by the Christmas bills. The supplying companies have found it necessary to reject the contract system hitherto in vogue and substitute meters. The results of this change seem to show either that the contract system charges were much too low, or else that those by meter are much too high. One gentleman who had his premises illuminated by "essentially the poor man's lamp" for a sum of £22 per annum, is now called upon to pay £19 for the three months. In several other cases the meter charge is about three times the contract price charged for the corresponding quarter of last year. Some of the users appear to have been astute enough to make a seven years' contract and will enjoy the fruits of their foresight by having a supply at about one third the regular price. Does not this point to the correctness of a suggestion I have already offered, that the electric light is introduced at a price below cost in the first instance, with a view of subsequently increasing it to a remunerative rate. This difficult and delicate task can scarcely be accomplished in any way without much dissatis-

faction and complaint, but it appears to have been taken by the horns in a very clumsy manner at Bath. An electrical paper remarks "the change should have been made during the dog days, and the consumers should have been brought gradually up to the fence." The experience of gas engineers is that even a 5 per cent. increase may be the origin of indignation meetings and deputations to the Directors, so it is not likely that so great a difference as that existing between the contract and the meter system at Bath will be tolerated. Anyone who can invent a method of successfully leading the British public "up to the fence," whether in regard to electricity, or anything else, will make his fortune.

Still more about the electric light. At a small town in Australia, the introduction of "the poor man's lamp" was heralded by an inaugural ceremony. Part of the programme consisted of the extinction of the gas lights to the tune of the "Dead March in Saul," and the subsequent turning on of electric lamps, with the accompaniment of "See the Conquering Hero Comes." The music was appropriately performed by a large brass band. But just as the local celebrities, who had been so public spirited as to promote the introduction of the "conquering hero," were loudly discoursing on its merits, it suddenly failed and could not be started again. Its disappearance was, of course, unaccompanied with solemn music, and in this respect it was more accommodating than the country tragedian, who, finding that the band had struck, said that he could not die without slow music, and accordingly expired in usual stage fashion to the solemn strains of a flageolet played by himself. However, the disaster was smoothed over, and the party adjourned to the town hall to see another electric light exhibition. Hardly had they got there before a mischievous main fuse "went," and the party were once more in darkness. Most people will agree that the bad taste which prompted the burlesque of a solemn ceremonial, for trade purpose, was thus rightly punished.

A recent number of *Industries* gives a full description of the arrangements for providing artificial light in our Houses of Parliament. Electricity, gas, oil, and candles all take their part in that work, and the special arrangement adopted for diffusing the light and obtaining proper ventilation possesses special interest to all concerned in the lighting and ventilating of buildings. Gas is preferred to electricity for the House of Commons, not only because the heat evolved by its combustion is required for the purposes of ventilation, but because of its superior diffusive power. Special experiments have proved that although electric light may be more powerful locally, gas light gives a better result at the point where it is chiefly required, viz., at or near the floor of the house. A peculiar feature is that no gas pendants, brackets or gas flames are visible in the house. The lights are contained in the space between the ceiling and the roof. The ceiling is constructed of timber framing well coated with asbestos fire proof paint, and the panels are filled in with ground glass screens, through which the light penetrates into the house. A fine wire netting is spread under each panel, so that in the event of accidental breakage no glass could fall. A large double argand burner is placed above the center of each panel, and the light is directed downwards by means of an iron concave reflector coated with zinc white. An iron pipe, three inches in diameter, conveys the products of combustion from each burner to an uptake flue. The total consumption of gas for full lighting is 1,500 cubic feet, and each burner uses 21 cubic feet per hour. Gas has also been found preferable for the signal light at the top of the tower. This is situated 250 feet from the ground, and is always in action while Parliament is sitting. It consists of a Wigham lighthouse burner, comprising 68 jets, the flames of which are caused, by an overhanging iron flue, to converge into a solid mass of flame 8 inches in diameter by 6 inches high. The consumption of gas is 240 cubic feet and the illuminating power 2,400 candles, showing the very high duty of 10 candles per foot. It is furnished with a dioptric apparatus, consisting of a refracting belt made of highly polished glass. The light from the naked flame falls without any interruption upon every portion of the dioptric apparatus, and the whole is enclosed in a glazed lantern, 9 feet in diameter and 12 feet high. As this arrangement is placed on the roof of the tower under the spire, a large body of light is necessary in order that the shadow thrown by the four stanchions which support the spire may not interfere greatly with the diffusion of the light at every point of the compass.

A great deal of dissatisfaction has been created by the action of the railway companies, who are attempting to force a revised scale of charges for goods traffic upon the public. Gas companies are not so much affected as many other trading concerns, for the revision has been so energetically carried out as to make it a vital question in some cases, as the additional charge for conveyance is sufficient to swallow up all the profit. Agriculturists and other persons who have occasion to send merchandise of a bulky character for long distances are of course amongst those who suffer most. In some instances coal and other materials can be conveyed by water, but there are many inland towns that are practically at the mercy of the railway companies. The worst of this is that it tells on both sides of the balance sheet. Not only is the cost of coal, iron and other necessaries increased, but there is tar, sulphate and coke to some extent, to be delivered to customers at a distance. This, coming at a time when prices are already bad, is a serious item. Manufacturers of sulphate suffer the most, as they have to pay more for their acid before they can make the salt, and as the sulphate must be sold at market prices, the increased cost of transit falls upon them also. The outcry is so great against the new rates, however, that the railway companies will probably climb down as easily as possible to something like the former scale of prices. Some say that they never had any hope of maintaining the innovation, but that it was merely a move to make people more satisfied with the existing state of things, and to cut the ground from under the feet of those who would press for reductions. A widespread impression has existed for some time that the existing rates upon several classes of merchandise are much too high.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES.

Mr. Robert Todd, son of Mr. J. R. Todd, Superintendent of the Middletown (N. Y.) Gas and Electric Light Company, has accepted a position under Mr. True, at the works of the Natick (Mass.) Gas Light Company. This is a case of the son following in the father's footsteps, for Mr. Todd, senior, made his record at the Natick works.

Mr. S. E. Linton, Superintendent of the Charlotte (N. C.) Gas Light Company, writing to the Journal under date of February 13, forwards the following:

To the Editor American Gas Light Journal: "H.," from Wisconsin, wants to know how to stop leaks in seams on top of holder. I have had considerable experience with leaky holders. About 10 years ago we changed from rosin gas to water gas, and after running a few months we had hundreds—I may with truth say thousands—of leaks. I succeeded in making our holder as tight as a bottle, with the aid of the following: Dissolve gum shellac in alcohol, mix with red lead in small quantities, or about the quantity you would use in 10 or 15 minutes, as the mixture sets quick. Force the mixture into the seam, with putty knife, after cleaning the seam of any oily substance or tar. If the leak is large, shellac a few straws of lamp wick and force them into the seams by the aid of the putty knife. Continue from day to day, and "H." will soon master the leaks; and it will be a permanent job, too.

Mr. W. S. Rathell, of the Cairo City (Ills.) Gas Company, also writes (under date of February 16) on the matter of repairing the leaky crowns of small holders as follows:

Dear Journal: For the benefit of "H.," from Wisconsin, I would say that the most efficient remedy that I know of for leaks in a gasholder, of the nature described by your correspondent, is the following: Make up a mixture of the consistency of dough, out of commercial glycerine and litharge, and work into the seams, after having cleaned all loose paint, etc., out of the fractures. This cement should be mixed in small quantities, as it hardens rapidly. It will withstand water and hydrocarbon vapors. A plank several feet long should be placed on the crowns of holders that are very thin, to enable the operator to work without causing the sheets to buckle.

"The Leominster (Mass.) Gas Light Company held its annual meeting on the 14th inst. The President's chair was vacant, Mr. Charles L. Joslin, who had been President of the Company ever since its incorporation 20 years ago, having died about a month ago. The following officers were elected for the ensuing year: Directors, N. Harwood, G. L. Morse, Caspar Derby, George Hall and H. M. Lane; President, N. Harwood; Clerk and Treasurer, H. M. Lane. The Company is in a prosperous condition, having sent out more gas and made more money during the past year than during any other year of its incorporation, notwithstanding a strong competition with the local electric lighting company.—Leominster."

The following very interesting communication, from the hand of a "good and true one," will be read with appreciation:

Engineer's Office, Indianapolis Gas Co.,
Indianapolis, Ind., Feb. 15, 1893.

To the Editor American Gas Light Journal: A curious thing happened here the other day. A quantity of natural gas issuing from the

top of a hollow iron pole support to the wires of the electric street cars was ignited by a spark from the trolley, and burnt all the wires, which fell to the ground, causing much consternation to the passers and a temporary stoppage of the street cars. The flame was smothered by the "chemical" from the fire department, and we tapped a 1½-inch hole in the ground and carried the escaping gas to a safe distance, where it was harmlessly burnt. Steps were immediately taken to find the leak. The main was exposed (after much labor, through the frozen ground) near to the pole, but not the slightest sign of a leak could be discovered. Several other holes were dug at different points, with the like results. Then it was remembered that right in the center of the street, and therefore close to the pole, was a "dead" artificial gas main which had not been used for 20 years. This dead main was uncovered, and, sure enough, the natural gas was coming out of it full bore. It was discovered that the electric pole had been placed right over this old dead main, and nearly touching it. The iron pole had been charged with the electric current from the overhead wires and had pressed down and into the dead main. At the point of junction a large hole had been burned in the pole and also the pipe; the current then went a distance of 130 feet along the main to a point where a 1½-inch natural gas service pipe crossed it. At this point the current passed from the main to the service pipe, and in so doing burnt a hole in both pipes; these holes were fully 2 square inches in size. The gas then passed from the service into the dead main, and was conveyed by it to the pole, with the results already stated. It would appear, then, that, with the extension of the electric street car system, a new element of danger has been introduced to our distribution plant; and it would seem to be necessary that great care should be exercised to see that the iron poles be kept a safe distance from gas, water or steam pipes, dead or living.

Messrs. Gautier & Co., of Jersey City, N. J., are now erecting at the Philadelphia gas works 48 benches of 6's—a new bed, and are also resetting 24 benches of the same dimensions. These are all of the Flemming setting. It is further worthy of note that the benches which are now to be reset have been in constant use since they were first fired, 27 months ago.

Superintendent McLean, of the Southbridge (Mass.) Gas and Electric Company, has been authorized to add to the capacity of the existing incandescent electric lighting equipment a 1,000 light machine. There is sufficient power to operate the proposed dynamo increase from the steam plant at present in the works.

The incandescent electric lighting plant of the Visalia (Cal.) Gas Light and Heat Company was started up early this month.

On the complaint of the local Health Officer (Dr. M. W. Smith), the proprietors of the Flatbush (L. I.) Gas Company have been notified to disconnect the works' drains from the sewerage system of the town. The town sewers drain into what is known as Flatlands Bay, and the oyster planters of these waters complained that the oyster beds were being ruined by deposits of coal oil, coal tar, etc.

The property of the St. Charles (Mo.) Gas Light and Coal Company, which was to have been sold at public auction on the 16th inst., was not disposed of on that date. We understand, however, that the reason for the withdrawal was the failure to elicit a bid equal to the upset price; and that a second offer at auction of the property will be made on Wednesday next.

A new interest has secured control of the plant and franchises of the Jamaica (L. I.) Gas and Electric Light Company, and it is likely that the coming season will see many changes made on the works. Brooklyn capitalists are the probable purchasers, and it would not surprise us if the gentlemen behind the Citizens Gas Light Company, of Brooklyn and East New York, were the parties in interest. In any event it would be reasonable for them to absorb the Jamaica property, as it would secure to them the right to supply gas to Woodhaven and other villages between Jamaica and the branch plant at East New York. A local authority in reporting the sale says: "The Jamaica Gas Light Company was incorporated 40 years ago, with a capital of $40,000, divided into 1,600 shares at $25 each. The property of the Company is worth, according to the last report, $77,000. The debts of the corporation, both bonded and floating, amounted to $26,933.33. Since then $3,000 has been added to the indebtedness by the putting in of a new boiler. Dividends were readily paid on the stock, until February, 1891, when the addition of an electric lighting plant to the works consumed all the profits." Mr. J. Tyler Watts, the former Superintendent, will likely remain with the Company.

Mr. J. L. Hallett, the gentleman whose consistent and well-organized plan of management was such a mainstay to the fortunes of the Springfield (Mass.) Gas Company, is repeating his successes at the latter point, in his new field of duty as General Manager of the Portland (Oregon) Gas Company. The consumers' roll is lengthened, and the Company's gas output, on account of uses other than that of illumination, is making great strides. We might also mention that the Portland Company, through Mr. Hallett, has just concluded a contract for the disposal of all the tar produced on the works, at the rate of $4.50 per bbl., the agreement to run for five years.

The proprietors of the Astoria (Oregon) Gas Light Company have concluded to accept an offer for their plant and franchises made by the owners of the local Thomson-Houston system. This will secure to the latter complete control of the lighting and street railway transportation systems of the city.

It is possible that Coney Island will have another gas plant, the same to be located on what is known as the Old Neck road.

On the afternoon of Friday, February 17, an interesting session of the Committee on Streets and Sewers, of the Boston Board of Aldermen (Alderman Floor in the Chair), was held for the purpose of a public hearing on the subject of the care and efficiency of the naphtha lamps maintained for public lighting, which have been anything but satisfactory to the residents, or to those who have to occasionally find their way in the territory so lighted. (?) Quite a number of persons were present at the hearing, but there was no diversity in the testimony elicited, which all went to show that the lamps, even at their best, were not up to the service it was specified they should render. The testimony of ex Alderman Cushing is offered as a sample of that submitted. Mr. Cushing reported his personal experience in going over the naphtha lamp route in the Jamaica Plain district on several occasions. He found that those lamps which were alight gave a very poor illumination, that eclipses were frequent, and that the lantern glasses were uniformly dirty. He was satisfied that the lamps did not yield 50 per cent. of the light ordinarily afforded by city gas lamps, although it was stipulated in the contract that the naphtha lamps should furnish an illumination equal to that yielded by the gas lamps ordinarily maintained in Boston. The hearing was eventually adjourned "for further testimony."

Mr. J. E. Shatzer, lessee of the Hollidaysburg (Pa.) Gas Works, writes to us that the Sutherland type of water gas generator, recently introduced at that plant, is giving perfect satisfaction. The system that it replaced was the "Brooks Oil Process." Mr. Shatzer adds: "An electric plant was installed here last summer, but its operators are nowhere in competition with good gas. They started in with a grand flourish of trumpets, but the man who laughs last laughs best—and longest. I am neither hurt nor scared, but am very able for my rations. We are 'sawing wood and saying nothing,' and have the latch-string out for any of the fraternity who happen this way."

A workman named Hennessy recently received injuries that resulted fatally in the pursuit of his duties, the said injuries being largely burns caused by the explosion of gas that escaped from a valve, which it was presumed was closed. A coroner's jury that investigated the circumstances of the death returned the following odd verdict: "That John Hennessy came to his death by an accident caused by valve E (the valve at the outlet of the oxygen meter), as per plan submitted as the engineer's report, being left open at the time repairs were being made; but there is no evidence to place the responsibility on any individual. The jurymen consider that *dangerous valves*, such as are in use for the process of gas making, should be kept under lock and key and in charge of a reliable man."

The Directors chosen for the ensuing year by the shareholders of the Citizens Gas Light Company, of Brooklyn, N. Y., are the following: C. P. Huntington, T. E. Stillman, J. E. Gates, G. H. Southard, G. M. Olcott, F. D. Davis, R. A. C. Smith, John Byrne, S. A. Lathrop, F. S. Smith, A. R. Edey, Camille Weidenfeld and S. F. Tudor.

Mr. J. E. Addicks has been chosen a Director in the Metropolitan Gas Light Company, of Brooklyn, N. Y. The Company has also issued $80,000 of 5 per cent. bonds, the balance of an authorized issue of $250,000.

At the annual meeting of the Gas Light Company, of Augusta Ga., the report submitted by President Barnes was very satisfactory to the shareholders, who signified their confidence in the

retiring Board of Directors by re-electing them unanimously. The Directors selected the following officers: President, George T. Barnes; Secretary, H. B. Adam; Superintendent, George A. Hookey.

AT the annual meeting of the Consumers Gas Company, of Wilkes-Barre, Pa., the following officers were chosen: Directors, John B. Smith, J. J. Robbins, C. Walters, J. T. Morgan, Harvey Yeager, John Flannigan and H. W. Dunning. President, John B. Smith, Vice-President, J. J. Robbins; Secretary, H. T. Dunning; Treasurer, John T. Morgan.

THE authorities of Fresno City, Cal., have entered into a contract for the public lighting with the Fresno Gas and Electric Light Company, under the following terms: Arcs of 2,000 candle-power each, $18 per month; gas lamps, $5 each per month, an all night and every night table to be followed. The gas rate includes the lighting and the extinguishing of the lamps.

THE following positive pronouncement from Mr. Frederic Egner, written to us in this city, under date of February 21st, ought to put an end to the whispered emissions of the mind readers that that gentleman was, is or purposes to be in any manner connected with the parties who are pushing the merits (?) of the Kentucky bred scheme, yclept the Harris gas process:

To the Editor AMERICAN GAS LIGHT JOURNAL: Having come to this city on business, I have heard with surprise that it has been asserted that the writer had at any time been employed by the "Harris Process" promoters. My connection with this process began when a number of St. Louis capitalists employed me to make an investigation into the merits of the "process" for them, as they had been offered an option to purchase the right to use said "process" in the State of Missouri—if they would pay $100,000 for it. Friends of the parties advised them to consult with the writer upon the subject, which was done. The investigation was made and my report submitted, in consequence whereof the deal for the "rights" was declared off by the parties who employed and paid me for the investigation; and then my connection with the Harris process and its promoters ended, excepting my apparently unfortunate writing up of the matter for the information of the readers of the JOURNAL. I have also learned that my name has been used by the promoters of the process, to advance their ends, in a Cincinnati newspaper—the *Enquirer*. This was done without my knowledge or consent. The writer has been at no time employed by the Harris process people, and has not received one cent from them, directly or indirectly. As to Mr. Miller's second letter, permit me to say only this. Mr. Miller assumes that a pound of oil would develop but 20,000 heat units, and that, therefore, I claimed more for the finished product than there was in the original matter used to produce the gas. But authorities differ as to how many heat units may be developed by a pound of oil. Some apparently good authorities have stated that, in experiments upon a large scale, conducted by them, from 35,000 to over 42,000 heat units were evolved by the combustion of a pound of oil. I do not desire to appear as a champion of such an absurdity as the Harris process; neither do I desire to apologize for having written the article so severely criticized. Any careful reader of the same will acquit the writer of that. It was not stated that the analyses of Harris gas given were from that which the writer *saw made* at Maysville, Ky., on the occasion of his visit there; and it was expressly stated that there were no scales used to weigh the coal or meters to measure the gas. With this statement of the facts the writer trusts he may be permitted to drop the matter.

Yours truly, FREDERIC EGNER.

THE following resolutions were recently adopted by the Board of Directors of the Toledo (O.) Gas Light and Coke Company, respecting the late Mr. Horace S. Walbridge, Vice-President of the Company:

Whereas, Our Vice-President, Mr. H. S. Walbridge, has been removed from our midst by death; and,

Whereas, His removal is a public and private grief, and leaves a vacancy that cannot be filled; therefore, be it

Resolved, That by the death of Mr. Horace S. Walbridge, we, the Directors of the Toledo Gas Light and Coke Company, realize that the Company for which he labored so faithfully has sustained an exceptionally severe loss, and one that will be long remembered.

Resolved, That we desire, through these resolutions, to bear testimony to the wise, patient and untiring efforts of our friend and brother in the management of the Company's affairs, and that to his energy and business sagacity it owes much of its present usefulness and efficiency.

Resolved, That as individuals we lament the loss of a true friend, a genial and delightful gentleman, and a judicious and helpful associate.

Resolved, That to the widow and children who have been bereft of a husband, father and friend, we extend our sincere sympathy and condolence in this the hour of their great affliction.

Resolved, That a copy of these resolutions be duly recorded upon the records of this Company, and also that a copy bearing the seal of the Toledo Gas Light and Coke Company be forwarded to the family of our late associate and highly esteemed friend.

H. S. YOUNG, Sec. pro tem. ABNER L. BACKUS, Chairman.

SOMETHING over a fortnight ago the purifying plant of the Sheboygan (Wis.) National Gas Company was temporarily demoralized by an explosion. The loss amounted to something like $300.

IT is proposed to ask for a new charter for the Cleveland (Ohio) Gas Light and Coke Company, the capitalization to be put at $3,000,000. In the event of a favorable response to the appeal, the outstanding scrip, which amounts to about $1,750,000, will be retired, common stock to be issued therefor. Mention of this recalls to mind the fact that the city's receipts (on account of the 6½ per cent. tax on the gross receipts of the local Gas Companies) for the half year amounted to more than $20,000.

THE bill numbered 234, introduced in the State Assembly on January 23d last, by Mr. Sullivan, is entitled an Act to secure a just and accurate measurement of gas supplied to consumers by gas companies, and is as follows:

Section 1. In cities of one million inhabitants and upward the Mayor shall appoint two persons, and the gas company having the largest capital stock shall have the privilege of appointing a third person, which three persons, or a majority of them, shall constitute a commission to inquire into the causes, if any there be, of the alleged increase of pressure of gas burners, whereby the consumption of gas is inordinately and improperly increased, and to take such action as may be necessary to regulate the flow of gas supplied to consumers by gas companies.

Section 2. Said commission may devise, or cause to be devised, and may invite competition amongst inventors for a device for preventing any such alleged increase of gas pressure, and may award to the successful competitor, if any, such sum as they deem his device reasonably worth, for use in the city, for which said commission is appointed, but not exceeding $2,500 in amount.

Section 3. Upon the filing of a report by said commission with the Secretary of State that they have selected a device for preventing such alleged increase of pressure, it shall become the duty of every gas company supplying gas to consumers in the city for which said commission was appointed, to place such device on the gas pipes or meters of such company at its own expense, whenever applied for by consumers, in such manner as directed by said commission, within six months from filing said report.

Section 4. Said commission shall have power to send for books, papers and persons, and compel the production of such books and papers, and the presence of such persons, and to examine under oath, and to employ a stenographer and other necessary assistants, and to incur other reasonable and proper expenses.

Section 5. Each of said commissioners shall receive a salary at the rate of $5,000 for each year or part thereof in which their services are rendered, and they shall fix the salaries of their subordinates, the total amount for such purposes per annum not to exceed $3,000; and the State Comptroller shall pay such salaries monthly, and shall assess and collect the amount thereof, in proportion to their capital stock, from all the companies supplying gas to consumers in the city for which such commission is appointed.

Section 6. Whenever any company shall not pay the assessment made on it, as aforesaid, within 30 days thereafter demand, it shall be the duty of such Comptroller to issue his warrant, under his hand and seal of office, directed to the sheriff of any county wherein such company has property, commanding him to levy upon, sell and collect out of such property such assessment, with interest and costs, and within 60 days to return said warrant to said Comptroller and the moneys so collected to the State Treasurer. The sheriff shall proceed on such warrant in all respects, and with like effect and in the same manner as upon executions issued against property on judgments of a court of record.

Section 7. Any violation of the provisions of this Act shall constitute a misdemeanor.

Section 8. This Act shall take effect immediately.

THE AMERICAN GAS LIGHT JOURNAL

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MONDAY, FEBRUARY 27, 1893.

The Market for Gas Securities.

The crash in Reading shares created a very bearish feeling in the general market, all classes of securities sharing in the depression. Consolidated sold down below 130, and the opening to day (Friday) was made at 129¼. There is also some cause for this decline in the distrust felt by investors as to the probable outcome of the gas rate bills before the Legislature. It looks to us, however, a certainty that dollar gas will not be the rule in New York this year. The Mutual Company has met with another misfortune in the death of its President, Mr. Arthur Leary, who succeeded the late Mr. John P. Kennedy. Mr. Leary had much to do with the successes which this Company has attained. The shares show no particular change. Equitable is very strong, on the well authenticated statement that the increase in the Company's output for last year was fully 12 per cent. over that for 1892.

There is absolutely no change in the Brooklyn situation, and the shares are steady to strong. The days of danger, however, are drawing near. Chicago gas was weak and lower, but the movement is purely speculative. The Company's increased business for last year exceeded 500,000,000 cubic feet. The Stock Exchange has listed an additional $540,000 first mortgage 5's of the Chicago Company. Baltimore Consolidated remains steady at 62¾ to 63, and Bay State is completely neglected. We note a sale at auction of 10 shares Buffalo Mutual gas at 180. There is some talk of a movement for an opposition Company in Buffalo.

Gas Stocks.

Quotations by Geo. W. Close, Broker and Dealer in Gas Stocks,

16 WALL ST., NEW YORK CITY.

FEBRUARY 27.

☞ All communications will receive particular attention.
☞ The following quotations are based on the par value of $100 per share.

	Capital.	Par.	Bid	Asked
Consolidated	$35,430,000	100	—	130
Central	500,000	50	90	95
" Scrip	220,000	—	—	100
Equitable	4,000,000	100	198	200
" Bonds	1,000,000	—	106	108
Harlem, Bonds	170,000	—	—	—
Metropolitan, Bonds	658,000	—	110	115
Mutual	3,500,000	100	142	—
" Bonds	1,500,000	—	100	102
Municipal, Bonds	750,000		—	—
Northern		50	—	—
" Bonds	150,000	—	—	100
Richmond Co., S. I.	346,000	50	—	—
" Bonds	20,000	—	—	—
Standard Gas Co—				
Common Stock	5,000,000	100	35	40
Preferred	5,000,000	100	88	91x
Yonkers		50	112	—
Gas Co's of Brooklyn.				
Brooklyn	2,000,000	25	138	140
Citizens	1,200,000	20	108	—
" S. F. Bonds	320,000	1000	—	103
Equity Gas Light Co.	2,000,000	100	45	—
Bonds	1,000,000	—	75	80
Fulton Municipal	3,000,000	100	152	155
" Bonds	300,000		102	—
Peoples	1,000,000	10	114	117
" Bonds (7's)	368,000	—	100	—
" " (6's)	94,000	—	100	—
Metropolitan	870,000	100	150	—
" Bonds (5's)	70,000	—	100	—
Nassau	1,000,000	25	170	—
" Ctfs	700,000	1000	99	100
Williamsburgh	1,000,000	50	155	—
" Bonds	1,000,000	—	107	110
Out of Town Gas Companies.				
Boston United Gas Co.—				
1st Series S.F. Trust	7,000,000	1000	85	—
2d " " "	3,000,000	1000	72½	74
Bay State Gas Co.—				
Stock	5,000,000	50	48	50
Income Bonds	2,000,000	1000	78	80
Buffalo Mutual, N. Y.	750,000	100	110	—
" Bonds	200,000	1000	95	100
Citizens, Newark	1,000,000	50	155	160
Chicago Gas Company.	25,000,000	100	87	87½
Chicago Gas Light. & Coke Co.—				
G't'd Gold Bonds	7,650,000	1000	85	90½
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1000	—	101
People's Gas and Coke Co., Chicago—				
1st Mortgage	2,100,000	1000	—	108
2d "	2,500,000	1000	104	105
Consumers Gas Light Co., Jersey City	2,000,000	100	25	—
Bonds	600,000	1000	85	90
Cincinnati G. & C. Co.	7,000,000	100	192	—
Consumers Toronto	1,600,000	50	190	191
Central, S. F., Cal			90	—
Capital, Sacramento, Cal			55	—
Consolidated, Balt.	11,000,000	100	62½	63
" Bonds	6,400,000		107	107½
Citizens Gas Lt. Co., Rochester, N. Y.	500,000	—	85	101
Bonds	250,000		—	—
East River Gas Co., Long Island City	1,000,000	100	100	105
Bonds	500,000	100	100	102
Hartford, Conn	750,000	25	120	128
Jersey City	750,000	20	180	200
Laclede Gas Light Co., St. Louis, Mo.—				
Common Stock	7,500,000	100	23	24
Preferred "	2,500,000	100	73	74
Bonds	9,034,400	1000	85½	86
Louisville, Ky	2,570,000	50	125	130
Little Falls, N. Y.	50,000	100	—	100
" Bonds	25,000	—	100	103
Montreal, Canada	2,000,000	100	200	208
Memphis (Tenn.) Gas	750,000	100	40	—
" Bonds	240,000	100	103	—
New Haven, Conn		25	200	—
Oakland, Cal			40	45
Peoples, Jersey City			115	125
" " Bonds			—	—
Paterson, N. J		25	99	102
Rochester, N. Y		50	99	100
Syracuse, N. Y	500,000	25	—	—
San Francisco Gas Co. San Francisco, Cal.	10,000,000	100	72¾	73
Washington, D. C.	2,000,000	20	240	245
Wilmington, Del.		50	88	90

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